SYLLABUS

BIOC 310, Section 30-Independent Research, Spring 2020

I. Course-Level Learning Outcomes

Students taking this course will:

1. Conduct independent, mentored laboratory research in the area of bacteriophage molecular genetics.

2. Develop an understanding of the fundamental principles of molecular genetics and bacteriophage biology.

3. Develop an understanding of some of the experimental techniques of molecular genetics and bacteriophage biology, and the ability to employ those techniques.

4. Develop the ability to plan experiments and prepare accurate experimental protocols.

5. Develop the ability to interpret data and draw conclusions therefrom.

6. Develop the critical and creative thinking skills that are the mark of a true scholar, by critical analysis of their data and those of others in the lab.

7. Develop the ability to speak and write clearly and accurately, when describing experiments performed, data obtained, and conclusions drawn, both orally and in writing.

II. Requirements for BIOC 310 course credit

BIOC 310 section 30 students perform research in the laboratory of Dr. Stewart in the BioSciences Dept. Registration requires permission of instructor. Students are expected to average at least 3 hours per week on their research project for each semester hour of credit. BIOC 310 may be repeated for credit an unlimited number of times, and students are encouraged to repeat as many times as they find convenient, since research accomplishment tends to increase with increasing experience. Students are expected to attend our weekly lab meetings, at which each student takes their turn at presenting their current research results, and all participate in discussion of those results and planning for further experiments. Each student also presents periodic written reports summarizing recent findings and plans for further experiments. At the end of each semester, each student presents a final project, either a research paper or a poster presentation.

III. Grading.

Grades are based on the quality of day-by-day research activities, on the overall quantity and quality of research accomplished, on quality of written and oral reports, and on participation in lab meetings. Grading is subjective, as level of performance will naturally increase with increasing experience, and as degree of research success is often impacted by degree of difficulty of the individual project. Since only able and motivated students are permitted to register, our experience has been that almost all students who work conscientiously at their research projects earn A for the course.

IV. Honor code.

Research is often a collaborative effort. This is particularly true in situations like ours, where students working in the same lab are often working on similar projects, which may use similar techniques. In such cases, you are encouraged to work together as much as possible, to minimize duplication of effort. For instance, you should feel free to utilize each other's solutions, and each other's writeups of common procedures. The limitation on this is that you may only use somebody else's work if you completely understand it and know exactly how it

was produced. When writing anything for publication, you must acknowledge significant contributions by anyone else, unless they are a co-author.

Honesty is essential for a research scientist**.** Research is often done privately, so nobody else is checking the data that you record against the actual data observed. There is a temptation to alter the results that you obtained to correspond with the results that you hoped for. In embarrassment at having made a mistake, there is the temptation not to record it, so no one will know. Anything like this is unacceptable. I and other members of the lab have to know exactly what happened, so that we understand your results accurately. The scientific community is dependent on the accuracy of the results that you publish, since there is no effective way of policing it.

V. Disability

Any student with a documented disability needing academic adjustments or accommodations is encouraged to speak with me before or at the beginning of the semester. All discussions will remain confidential. Students with disabilities should also contact Disabled Student Services in the Ley Student Center.

VI. The instructor is Charles Stewart.

Office: Room W104, George R. Brown Building. Phone: 713-348-4926. Email: crs@rice.edu. I have no formal office hours, but you are welcome to come by at any time, or to make appointments for specific times.